

ABSTRACT

A process for enhancing precipitation strengthening in steel and for making a high-strength micro-alloy steel, and a steel made from the process. The process includes the step of deforming the steel containing a suitable precipitate strengthening substance, at a temperature at which the microstructure of the steel is essentially stable and at which those precipitation strengthening particles that form are of a desirable particle size for precipitation strengthening. Deforming the steel introduces dislocations in the crystal structure of the steel, which increases the kinetics of precipitation by increasing the number of precipitation nucleation sites and accelerating the rate of diffusion of the precipitate material. The steel may be deformed by bending or rolling the steel. Preferably the process also includes the step of cooling the steel at a rapid rate so as to minimize the formation of precipitate particles of a larger-than-desired size.

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